

THE INVENTION CLAIMED IS

1. A high density polymer-based integrated electrode apparatus,
comprising:
a central electrode body, and
a multiplicity of arms extending from said electrode body,
wherein said central electrode body and said multiplicity of arms are
comprised of a silicone material with metal features in said silicone material that
comprise electronic circuits.
2. The high density polymer-based integrated electrode apparatus of claim
1 wherein said silicone material is poly(dimethylsiloxane).
3. The high density polymer-based integrated electrode apparatus of claim
1 wherein said arms comprise a silicone material with a multiplicity of separate
metal traces in said silicone material.
4. The high density polymer-based integrated electrode apparatus of claim
1 wherein said arms comprise a silicone material with 1 through n separate metal
traces in said silicone material.
5. The high density polymer-based integrated electrode apparatus of claim
1 wherein said arms comprise a silicone material with 125 separate metal traces
in said silicone material.
6. The high density polymer-based integrated electrode apparatus of claim
1 wherein said arms comprise a poly(dimethylsiloxane) material with a
multiplicity of separate metal traces in said poly(dimethylsiloxane) material.
7. The high density polymer-based integrated electrode apparatus of claim
1 wherein said arms comprise a poly(dimethylsiloxane) material with 1 through
n separate metal traces in said poly(dimethylsiloxane) material.

8. The high density polymer-based integrated electrode apparatus of claim 1 wherein said arms comprise a poly(dimethylsiloxane) material with one hundred twenty five separate metal traces in said poly(dimethylsiloxane) material.

9. The high density polymer-based integrated electrode apparatus of claim 1 comprising eight separate arms made of a silicone material and one hundred twenty five separate metal traces in said silicone material of each of said eight separate arms.

10. The high density polymer-based integrated electrode apparatus of claim 1 comprising eight separate arms made of a poly(dimethylsiloxane) material and one hundred twenty five separate metal traces in said poly(dimethylsiloxane) material of each of said eight arms.

11. The high density polymer-based integrated electrode apparatus of claim 1 comprising eight separate arms made of a silicone material and one hundred twenty five separate metal traces in said silicone material of each of said eight separate arms, said eight separate arms and said central electrode body contained within an area of 16 mm².

12. The high density polymer-based integrated electrode apparatus of claim 1 comprising eight separate arms made of a poly(dimethylsiloxane) material and one hundred twenty five separate metal traces in said poly(dimethylsiloxane) material of each of said eight arms, said eight separate arms and said central electrode body contained within an area of 16 mm².

13. The high density polymer-based integrated electrode apparatus of claim 1 comprising one thousand electrical circuits within an area of 16 mm² and contained in eight separate arms made of a silicone material and one hundred

twenty five separate metal traces in said silicone material of each of said eight separate arms.

14. The high density polymer-based integrated electrode apparatus of claim 1 comprising one thousand electrical circuits within an area of 16 mm² and contained in eight separate arms made of a poly(dimethylsiloxane) material and one hundred twenty five separate metal traces in said poly(dimethylsiloxane) material of each of said eight arms.

15. The high density polymer-based integrated electrode apparatus of claim 1 for capturing an image and transmitting the image into an eye to a brain, the apparatus including a video camera that captures the image and sends the image to the eye and through separate metal traces in said arms and said central electrode body to the brain.

16. The high density polymer-based integrated electrode apparatus of claim 1 for capturing an image and transmitting the image into an eye to a brain, the apparatus including a video camera that captures the image and sends the image to the eye and through separate metal traces in separate arms made of a poly(dimethylsiloxane) and said central electrode body to the brain.

17. The high density polymer-based integrated electrode apparatus of claim 1 for capturing an image and transmitting the image into an eye to a brain, the apparatus including a video camera that captures the image and sends the image to the eye and through separate metal traces in separate arms made of a poly(dimethylsiloxane) and said central electrode body made of a poly(dimethylsiloxane) to the brain.